UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,452	03/31/2004	Jiewen Liu	80107.160US1	5473

7590	11/15/2005

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EXAMINER
LA, NICHOLAS T

ART UNIT	PAPER NUMBER
2687	

DATE MAILED: 11/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/814,452	LIU ET AL.
	Examiner	Art Unit	
	Nicholas T. La	2687	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>31 March 2004</u>.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-27</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-27</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some *   c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Specification

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35

U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1)   **Claims 1, 3** are rejected under U.S.C. 102 (b) as being anticipated by

Borras (U.S. Patent No. 5,128,938).

Regarding **claim 1 and 3**, Borras discloses a method comprising

determining a power savings level for a mobile station based on an amount of

data traffic. Borras further discloses a method determining a power savings level

comprises determining a time interval for the mobile station to sleep (col. 3, line

19 to line 44).

2)   Claims 8, 15, 18, are rejected under U.S.C. 102 (b) as being anticipated

by van Bokhorst et al. (U.S. Patent No. 6,192,230).

Regarding **claim 8**, van Bokhorst et al. discloses a method comprising:

Determining a desired sleep interval to sleep to save power (col. 4,

line 27 to 39).

Determining a broadcast time to wake up to receive packet from an

access point (col. 5, line 17 to col. 6, line 16).

Setting a wake up time based on the desired sleep interval and the

broadcast time (col. 5, line 14 to 30).

Regarding **claim 15**, van Bohorst et al. further discloses an apparatus

having a machine readable medium with instruction stored thereon the when

accessed, result in a machine performing:

Waking up a mobile station to receive a beacon (col. 5, line 17 to

30).

Evaluating traffic activity (col. 2, line 7 to 25).

Setting a power savings level for the mobile station based on the traffic activity (col. 2, line 7 to 25).

Regarding **claim 18,** van Bohorst et al. further discloses an apparatus comprises setting a sleep time associated the power saving levels (col. 4, line 26 to 39).

3) **Claim 21** is rejected under U.S.C. 102 (b) as being anticipated by Romans (U.S. Patent No. 6,665,520).

Regarding **claim 21**, Romans discloses an apparatus configured to communicate in a wireless network in compliant with IEEE 802.11 (col. 3, line 5 to 11) and configured to sleep for a number of beacon intervals based on traffic volume (col. 2, line 17 to line 54; col. 6, line 15 to 21).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4)   **Claim 2** is rejected under 35 U.S.C. 103 (a) as being unpatentable over

Borras (U.S. Patent No. 5,128,938) in view of Patel et al. (U.S. Patent No.

6731600).

Regarding **claim 2**, Borras discloses a method comprising determining the

amount of data traffic as different activity levels within duration of a variable sleep

cycle (col. 7, line 49 to col. 8, line 7).

However, Borras does not disclose determining the amount of data traffic

as a percentage of traffic activity within a time interval.

Nevertheless, in an analogous art, Patel et al. discloses a system and

method for determining network condition. Patel et al. further discloses a method

of monitoring of the available bandwidth performed at predetermined intervals

based on elapsed time or percentage transmission of the data object (col.12, line

66 to col. 13, line 8). Therefore, it would have been obvious to one having

ordinary skill in the art at the time of the invention was made to modify Borras

method to include Patel et al. view to determining the amount of traffic as a

percentage of traffic activity within a time interval. This method would enable

further the amount power being saved by distinct or allocate the amount of power

being used more appropriately in a time interval corresponding to a specific

amount of data traffic.

5)   **Claims 4, 5, 7** are rejected under 35 U.S.C. 103 (a) as being unpatentable

over Borras (U.S. Patent No. 5,128,938) in view of Romans (U.S. Patent No.

6,665,520).

Regarding **claim 4**, Borras discloses a method determining power saving

based on an amount of traffic (col. 3, line 19 to line 44).

However, Borras does not discloses a method wherein determining a time

interval for the mobile station to sleep comprises comparing a desired sleep

interval and required wake-up time to receive broadcast and multicast packets.

In an analogous art, Romans discloses a power saving station method

wherein determining a time interval for the mobile station to sleep comprises

comparing a desired sleep interval and required wake-up time to receive

broadcast and multicast packets (col. 5, line 32 to col. 6, line 67). Therefore, it

would have been obvious to one of ordinary skill in the art at the time of the

invention to modify Borras method to include a method wherein determining a

time interval for the mobile station to sleep comprises comparing a desired sleep

interval and required wake-up time to receive broadcast and multicast packets in

order to further power saving.

Regarding **claim 5**, Romans further discloses a power saving station

method wherein the time interval for the mobile station to sleep is expressed as a

number of 802.11 compliant beacon intervals (col. 1, line 54 to col. 2, line 54; col.

3, line 5 to 11). Therefore, it would have been obvious to one of ordinary skill in

the art at the time of the invention to modify Borras method to include Romans

teaching of the time interval for the mobile station to sleep is expressed as a

number of 802.11 compliant beacon interval in order to further enhancing the fact

that the time interval for the mobile station to sleep is expressed as a number of

802.11 compliant beacon intervals.

Regarding **claim 7**, Romans further discloses a power saving station

method wherein determining a time interval for the mobile station to sleep

comprises comparing a Delivery Traffic Indication Message (DTIM), which is

described as contains of a set of control and information flags within a received

beacon with a time interval associated with the power saving level (col. 2, line 29

to col. 4, line 30). Therefore, it would have been obvious to one of ordinary skill

in the art at the time of the invention to modify Borras method to include

determining a time interval for the mobile station to sleep comprises comparing a

Delivery Traffic Indication Message (DTIM) count within a received beacon with a

time interval associated with power saving level such as taught by Romans in

order to further assisting the power saving process.

6)   **Claim 6** is rejected under 35 U.S.C. 103 (a) as being unpatentable over

Borras (U.S. Patent No. 5,128,938) in view of Romans (U.S. Patent No.

6,665,520) and further in view of Lindskog et al. (U.S. Pub. No. US

2001/0031626).

Regarding **claim 6**, Borras discloses a method determining power saving based on an amount of traffic (col. 3, line 19 to line 44), Romans discloses the time interval for the mobile station to sleep is expressed as a number of 802.11 compliant beacon interval (col. 1, line 54 to col. 2, line 54; col. 3, line 5 to 11).

However, Borras and Romans do not disclose a method is performed within a beacon monitor task run in response to an interrupt caused by a Target Beacon Transmission Times (TBTT) timer.

In an analogous art, Lindskog et al. discloses a method for power status for wireless communication comprises the method is performed within a beacon monitor task run in response to an interrupt caused by a Target Beacon Transmission Times (TBTT) timer (page 3, [0032]). Therefore, it is obvious for one who skill in the art at the time of the invention to modify Borras and Romans and utilize Lindskog method of target beacon transmit time timer (TBTT) to further advance the purpose of power saving as well as avoiding "missed" broadcast transmissions.

7)   **Claims 13, 14,** are rejected under 35 U.S.C. 103 (a) as being unpatentable over van Bokhorst et al. (U.S. Patent No. 6,192,230) in view of Lindskog et al. (U.S. Pub. No. US 2001/0031626).

Regarding **claims 13 and 14,** van Bokhorst et al. discloses a method for determining duration of the wake-up period based on broadcast traffic (figure 6, 10; col.4, line 66 to col. 6, line 16; col. 8, line 5 to 35).

However, van Bokhorst et al. does not teach method of setting a wake-up time comprises setting the wake up time to the end of one desired sleep

interval when the broadcast time is more than two desired sleep interval in the

future, and setting the wake-up time to the broadcast time when the broadcast

time is less than two desired sleep intervals in the future as being disclosed by

the applicant in above claims.

Nevertheless, in an analogous art, Lindskog et al. discloses a

method of having to choose setting the sleep period to first duration time value,

or second duration time value given the fact that wake-up period and sleep

period are proportionally related (page 7, [0081]). Therefore, it is obvious for one

who skill in the art at the time of the invention to modify Bokhorst et al. to include

Lindskog method to complete the method of setting the wake-up time durations

to different values based on broadcast traffic to further advance the purpose of

power saving.

8)   **Claims 16, 17** are rejected under 35 U.S.C. 103 (a) as being unpatentable

over van Bokhorst et al. (U.S. Patent No. 6,192,230) in view of Lindskog et al.

(U.S. Pub. No. US 2001/0031626), and further in view of Patel (U.S. Patent No.

6,731,600).

Regarding **claim 16**, van Bokhorst et al. and Lindskog et al. discloses an

apparatus for evaluating traffic activity comprising determining the amount

activity levels as opposed to the individual mobile station or the whole system

over a time interval (col. 4, line 40 to col.7, line 14).

However, van Bokhorst and Lindskog et al. do not disclose determining

the amount of data traffic as a percentage of traffic activity within a time interval.

Nevertheless, in an analogous art, Partel et al. discloses a system and method for determining network condition. Partel et al. further discloses a method of monitoring of the available bandwidth performed at predetermined intervals based on elapsed time or percentage transmission of the data object (col.12, line 66 to col. 13, line 8). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify Bokhorst et al. and Lindskog et al. method to include Partel et al. view to determining the amount of traffic as a percentage of traffic activity within a time interval. This method would enable further the amount power being saved by distinct or allocate the amount of power being used more appropriately in a time interval corresponding to a specific amount of data traffic.

Regarding **claim 17**, van Bohorst et al. further discloses an apparatus wherein the power savings level, may be set differently each time the traffic activity is evaluated (figure 5, 7; col. 6, line 16 to 42).

9)   **Claims 9, 10, 11,12, 19, 20,** are rejected under 35 U.S.C. 103 (a) as being unpatentable over van Bokhorst et al. (U.S. Patent No. 6,192,230) in view of Romans (U.S. Patent No. 6,665,520).

Regarding **claim 9**, Van Bokhorst et al. discloses a method determining a desired sleep interval for a mobile unit comprises examining a Traffic Indication Message (figure 2, 4, 5, 6, and 7; col. 4, line 40 to col. 7, line 14).

However, van Bokhorst et al. does not teach determining a desired number of beacon intervals to sleep.

In an analogous art, Romans discloses a power saving station method determining a desired number of beacon intervals to sleep (col. 6, line 15 to 21). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify van Bokhorst et al. method to include determining a desired number of beacons intervals to sleep such as taught by Romans in order to further conserving power since the power saving station does not have to wake up to receive all the access point beacons.

Regarding **claims 10, 19**, Romans further discloses a power saving station method determining a desired number of beacon intervals to sleep based on a volume of data traffic (col. 2, line 1 to 16; col. 6, line 15 to 21). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify van Bokhorst et al. method to include determining a desired number of beacons intervals to sleep based on a volume of data traffic such as taught by Romans in order to further conserving power since the power saving station does not have to wake up to receive all the access point beacons.

Regarding **claim 11**, Romans further discloses a power saving station method further comprises selecting one of a plurality of power savings levels based on the volume of data traffic (figure 2, 6; col. 5, line 18 to col. 6, line 16). Therefore, it would have been obvious to one of ordinary skill in the art at the

time of the invention to modify van Bokhorst et al. method to include determining

a desired sleep interval comprises selecting one of a plurality of power saving

levels based on the volume of data traffic such as taught by Romans in order to

further conserving power.

Regarding **claim 12**, Romans further discloses a power saving station

method further examining a set of power management information element within

IEEE 802.11 compliant beacon standard (col. 3, line 5 to col. 6, line 64).

Therefore, it would have been obvious to one of ordinary skill in the art at the

time of the invention to modify van Bokhorst et al. method to include a power

saving station method further examining a set of power management information

element within IEEE 802.11 compliant beacon standard such as taught by

Romans in order to further enhancing the system to IEEE 802.11 compliant.

Regarding **claim 20**, Romans further discloses a power saving station

method wherein determining a number of beacon intervals for the mobile station

to sleep comprises comparing a desired number of beacon intervals with a

Delivery Traffic Indication Message count (col. 3, line 38 to col. 4, line 30; col. 6,

line 14 to 32). Romans discloses a broadcast data field with a broadcast

countdown counter in purpose of indicates the number of beacon period before

the next broadcast period. A value of 1 in the counter would indicate that the

next beacon period is the start of the broadcast period. Therefore, it would have

been obvious to one of ordinary skill in the art at the time of the invention to

modify van Bokhorst et al. apparatus to include determining a number of beacon

intervals for the mobile station to sleep comprises comparing a desired number

of beacon intervals with a broadcast countdown counter such as taught by

Romans in order to further enhancing the effectiveness in power saving.

10)   Claims 22, 23, are rejected under 35 U.S.C. 103 (a) as being

unpatentable over Romans (U.S. Patent No. 6,665,520) in view of Adachi (U.S.

Patent No. 6,018,642).

Regarding **claim 22**, Romans discloses a method configuring a wireless

communication system and configured to sleep for a number of beacon intervals

based on traffic volume (col. 2, line 17 to line 54; col. 3, line 5 to 11; col. 6, line

15 to 21).

However, Romans does not disclose comprising a network interface card.

In an analogous art, Adachi discloses a radio communication system,

base station for radio communication system, and intermittent power-on type

mobile station. Adachi further disclose a net work interface card (col. 14, line 8 to

55). Therefore, it would have been obvious to one of ordinary skill in the art at

the time of the invention to modify Romans method to include a net work

interface card such as taught by Adachi in order to further completing the

apparatus of the wireless network in the spirit of Romans invention.

Regarding **claim 23**, Adachi further discloses an apparatus comprising a

mobile computer (col. 13, line 54 to 62).

11)   Claims 24, 25, 26, 27 are rejected under 35 U.S.C. 103 (a) as being

unpatentable over Romans (U.S. Patent No. 6,665,520) in view of Adachi (U.S.

Patent No. 6,018,642).

Regarding **claim 24**, Romans discloses a method for an electronic system

comprises waking up an apparatus to receive a beacon, evaluating traffic activity,

and setting a power savings level for the apparatus based on traffic activity (col.

2, line 17 to 54).

However Romans does not teach an apparatus comprises:

A plurality of antennas.

A radio interface coupled to the plurality of antennas.

A processor coupled to the radio interface.

A static random access memory with instructions stored.

In an analogous art, Adachi teaches a radio communication system

includes an intermittent power-on type mobile station for shifting automatically to

a power-on state synchronously with a received timing of a beacon signal

comprises:

A plurality of antennas (Figure 5, 7; col. 15, line 14 to 16).

A radio interface coupled to the plurality of antennas (Figure 5, 7;

col. 15, line 3 to 17).

A processor coupled to the radio interface (Figure 7; col. 15, line 50 to 65).

A static random access memory with instructions stored (Figure 7; col. 14, line 33 to 50).

Therefore, it is obvious for one ordinary skill in the art at the time of the invention to modify the teaching of Romans method to include features in apparatus as disclosed by Adachi to achieve completion of a system with a capacity of saving power effectively.

Regarding **claim 25**, Romans further discloses setting a power savings level comprises determining a time interval for the apparatus to sleep (col. 2, line 1 to 54; col. 6, line 16 to 33).

Regarding **claim 26**, Romans further discloses determining a time interval for the apparatus to sleep comprises comparing a desired sleep interval and a required wake-up time to receive multicast packets (col. 5, line 32 to col. 6, line 67).

Regarding **claim 27**, Romans further discloses an electronic system wherein the time interval for the apparatus to sleep is expressed as a number of beacon intervals (col. 6, line 16 to 33).

Reference Cited

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Borras (U.S. Patent No. 5,128,938) discloses an energy saving protocol for communication system.

Haartsen (U.S. Patent No. 6,804,542) discloses a system and method for conserving power in a radio communication network.

Callaway et al. (U.S. Patent No. 6,879,567) discloses a method and apparatus for battery life extension for nodes within beaconing networks.

Hunzinger (U.S. Patent No. 6,829,493) discloses an adaptive adjustment of sleep duration to increase standby time in wireless mobile stations.

Wieczorek (U.S. Patent No. 5,584,048) discloses a beacon based packet radio standby energy saver.

Lee (U.S. Patent No. 6,628,972) discloses a power saving method of mobile telephone.

Emeott et al. (U.S. Patent No. 6,917,598) discloses a unscheduled power save delivery method in a wireless local area network for real time communication.

Owen (U.S. Patent No. 5,241,691) discloses a method of optimizing the transmission of idle beacon messages and a communications system using the method.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicholas T. La whose telephone number is (571)-272-8075. The examiner can normally be reached on Mon-Fri 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on (571)-272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SONNY TRINH
PRIMARY EXAMINER

Examiner:

Date: November 9, 2005